

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY



(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 28 NOV 2005

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Applicant's or agent's file reference MDX,017-PCT	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416	
International application No. PCT/GB2005/050043	International filing date (day/month/year) 24.03.2005	Priority date (day/month/year) 30.03.2004
International Patent Classification (IPC) or national classification and IPC C23F11/16, C11D3/00, C11D3/34, C11D11/00, C09G1/02		
Applicant MIDDLESEX SILVER CO. LIMITED et al.		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 4 sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input checked="" type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>		
Date of submission of the demand  05.08.2005	Date of completion of this report  24.11.2005	
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Mauger, J  Telephone No. +49 89 2399-8447 	

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/GB2005/050043

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements**\* of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-32 as originally filed

**Claims, Numbers**

1-35 received on 05.08.2005 with letter of 03.05.2005

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/GB2005/050043

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## Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

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### 1. Statement

Novelty (N)	Yes: Claims	1-35
	No: Claims	
Inventive step (IS)	Yes: Claims	1-35
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-35
	No: Claims	

### 2. Citations and explanations (Rule 70.7):

**see separate sheet**

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## Box No. VI Certain documents cited

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### 1. Certain published documents (Rule 70.10)

and / or

### 2. Non-written disclosures (Rule 70.9)

**see separate sheet**

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## Box No. VII Certain defects in the international application

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The following defects in the form or contents of the international application have been noted:

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/GB2005/050043

**Re Item V.**

- 1) Reference is made to the following documents:

D1 : EP 0 492 487 A (DODUCO GMBH + CO DR. EUGEN DUERRWAECHTER) 1 July 1992 (1992-07-01)

D2 : US 3 503 883 A (IAN ALASTAIR MONCRIEFF FORD ET AL) 31 March 1970 (1970-03-31)

D3 : GB 1 070 383 A (J. GODDARD & SONS LIMITED) 1 June 1967 (1967-06-01)

D4 : GB 1 217 414 A (J. GODDARD & SONS LIMITED) 31 December 1970 (1970-12-31)

D5 : US 3 248 235 A (PRYOR DONALD M ET AL) 26 April 1966 (1966-04-26)

- 2) Document D1 (see column 3, line 18 -column 5 ,line 40, claims and examples) discloses an aqueous tarnish-inhibiting composition for silver which comprises an alkyl mercaptan (eg a C16 thiol) inhibitor and surface active components. The surface active components may comprise a mixture of a non-ionic and anionic surfactants. The pH of the composition is 1-10.
- 2.1) Document D2 (see column 2, line 67 to column 3, line 52, claims and examples 2 and 7) discloses aqueous tarnish inhibiting compositions containing dialkyl disulfides. The compositions may contain detergents and be used as polishing paste or non-ionic emulsifiers and be used as dips.
- 2.2) Document D3 (see claims and example 7) discloses protective polishing and cleaning compositions for silver. The compositions may contain alkyl thioglycollates and non-ionic surfactants.
- 2.3) Document D4 (see page 1, line 85 to page 2, line 49, claims and examples) discloses a polishing and tarnish removing aqueous dip for silver containing an acid, thiourea, a non-ionic surfactant and an alkyl thiol.
- 2.4) Document D5 (see column 3, lines 26-33, claims and examples) discloses an anti-tarnish composition for copper-containing surfaces. The compositions typically contained alkyl mercaptans, sodium chloride, a non-ionic surfactant, citric acid and

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/GB2005/050043

optionally an abrasive.

- 3) The present composition (see claims 1-34) is novel (Article 33(2) PCT) since the composition contains a specific combination of a non-ionic, anionic and zwitterionic surfactants. The use (claims 35) is novel since it employs this composition.
- 3.1) The problem solved by the present compositions is the provision of aqueous anti-tarnishing compositions which are able to uniformly disperse the treatment agent and remain stable for long periods of time.

The application (see examples) contains indications that treatment compositions with the presently claimed combination of surfactants are particularly stable. Thus the problem is solved.

The cited prior art contains no suggestion that particular combinations of surfactants would solve this problem and thus an inventive step (Article 33(3) PCT) can be recognised. The use is inventive since the composition used is inventive.

**Re Item VI**

**Certain documents cited**

**Certain published documents**

Application No Patent No	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
WO-A-2004106567	09.12.2004	01.06.2004	03.06.2003
WO-A-200487996	14.10.2004	30.03.2004	31.03.2003

**Re Item VII**

**Certain defects in the international application**

- 1) Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/GB2005/050043

disclosed in the documents D1-D5 is not mentioned in the description, nor are these documents identified therein.

- 2) The description is not in conformity with the claims as required by Rule 5.1(a)(iii) PCT.

## CLAIMS

1. A water-based composition for treating a metal, comprising a treatment agent selected from an alkanethiol, alkyl thioglycollate, dialkyl sulfide or dialkyl disulfide, and in concentrations effective to solubilize said treatment agent:

a non-ionic relatively hydrophobic surfactant which is a compound of the formula



- wherein  $R_1$  represents  $C_{10}$ - $C_{24}$  alkyl or alkenyl,  $m$  is 0 or 1 and  $n$  is 1 or 2, or which is ethoxylated fatty acid monoglyceride;

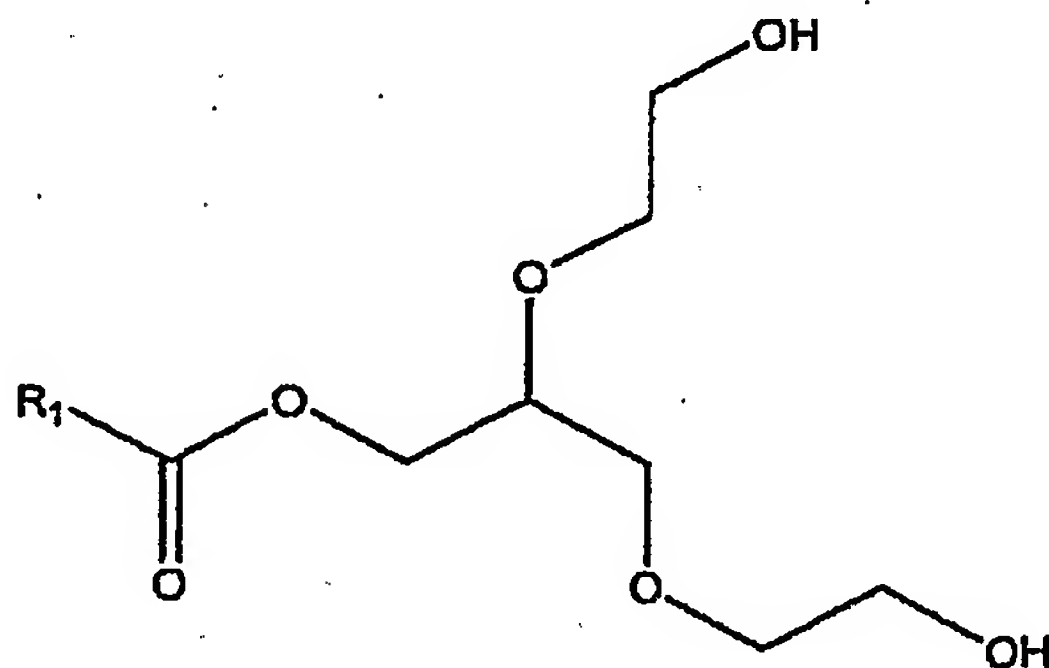
an anionic surfactant; and

a zwitterionic surfactant selected from betaine surfactants, imidazoline-based surfactants, aminoalkanoate surfactants and iminodialkanoate surfacts.

2. The composition of claim 1, wherein the treatment agent is hexadecyl or octadecyl mercaptan.

3. The composition of claim 1 or 2, wherein the non-ionic relatively hydrophobic surfactant comprises cocamide DEA.

4. The composition of claim 1, wherein the non-ionic relatively hydrophobic surfactant comprises an ethoxylated fatty acid monoglyceride of the formula:



wherein  $R_1$  represents  $C_{10}$ - $C_{24}$  alkyl or alkenyl.



5. The composition of claim 4, wherein the surfactant is a compound in which R1 represents C<sub>12</sub>-C<sub>18</sub> alkyl or alkenyl.
- 5 6. The composition of claim 5, wherein the surfactant is glycereth-2-cocoate.
7. The composition of any preceding claim, comprising 0.5-10 wt % of the relatively hydrophobic surfactant.
- 10 8. The composition of any preceding claim, comprising 1-6 wt % of the relatively hydrophobic surfactant.
9. The composition of any preceding claim, comprising 2-5 wt % of the relatively hydrophobic surfactant.
- 15 10. The composition of any preceding claim, further comprising a polyol.
11. The composition of claim 10, comprising 0.5-10 wt % of the polyol.
- 20 12. The composition of claim 10, comprising 1-8 wt % of the polyol.
13. The composition of claim 10, comprising 1-5 wt % of the polyol.
14. The composition of any of claims 10-13, wherein the polyol is glycerol.
- 25 15. The composition of any preceding claim, wherein the anionic surfactant is of the formula RO-(CH<sub>2</sub>CH<sub>2</sub>)<sub>n</sub>SO<sub>3</sub>M wherein R represents C<sub>10</sub>-C<sub>18</sub> alkyl, n is 2-6 and M represents a monovalent cation.
- 30 16. The composition of claim 15, wherein the anionic surfactant is a monovalent cation salt of laureth sulfate.



17. The composition of any preceding claim, wherein the amount of anionic surfactant (solids) is 0.1-15 wt%.

18. The composition of claim 17, wherein the amount of anionic surfactant (solids) is 0.3-10 wt%.

19. The composition of claim 17, wherein the amount of anionic surfactant (solids) is 0.5-1 wt%.

20. The composition of any preceding claim, wherein the zwitterionic surfactant is cocamidopropyl betaine.

21. The composition of any preceding claim, wherein the zwitterionic surfactant is present in an amount of 0.3-6 wt%

22. The composition of claim 21, wherein the zwitterionic surfactant is present in an amount of 0.6-3 wt%.

23. The composition of claim 21, wherein the zwitterionic surfactant is present in an amount of 0.9-1.5 wt%.

24. A composition according to any preceding claim comprising treatment agent in an amount of 0.1-5 wt%

25. A composition according to claim 24 comprising treatment agent in an amount of 0.5-2 wt%.

26. A composition according to claim 24, comprising treatment agent in an amount of about 1 wt%.

27. A composition according to any preceding claim, further comprising a salt of a strong base with a strong mineral acid.

28. The composition of claim 27, wherein the salt is sodium chloride or sodium sulfate.
- 5 29. The composition of claim 27 or 28, comprising 0.1-3 wt% of said salt.
30. The composition of claim 27 or 28, comprising 0.5-2 wt% of said salt.
31. The composition of claim 27 or 28, comprising about 1 wt% of said salt.
- 10 32. The composition of any preceding claim, which is a polishing dip and further comprises an acid and a thiourea.
- 15 33. The composition of any of claims 1-31, which is a cream or paste polish further comprising a solid polishing medium.
34. The composition of claim 33, wherein the polishing medium is precipitated chalk, infusorial earth, silica or  $\gamma$ -alumina.
- 20 35. Use of the composition of any of claims 1-34 for the treatment of a silver-copper alloy, a silver-copper-germanium alloy, copper, brass or nickel.
- 25